

Audit Report



SUMMARY OF THE DOD PROCESS FOR DEVELOPING QUANTITATIVE MUNITIONS REQUIREMENTS

Report No. D-2000-079

February 24, 2000

Office of the Inspector General
Department of Defense

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Acronyms

CBMR
CINCS
JCS
SOCOM

Capabilities-Based Munitions Requirements
Commanders in Chief
Joint Chiefs of Staff
Special Operations Command



**INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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February 24, 2000

**MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,
TECHNOLOGY, AND LOGISTICS
DIRECTOR, JOINT STAFF**

**SUBJECT: Audit Report on Summary of the DoD Process for Developing Quantitative
Munitions Requirements (Report No. D-2000-079)**

We are providing this report for review and comment.

DoD Directive 7650.3 requires that all recommendations be resolved promptly. The Under Secretary of Defense for Acquisition, Technology, and Logistics, and the Director, Joint Staff, did not comment on a draft of this report. We request that the Under Secretary of Defense for Acquisition, Technology, and Logistics, and the Director, Joint Staff, provide comments on the final report by March 24, 2000.

We appreciate the courtesies extended to the audit staff. For additional information on this report, please contact Ms. Jacqueline L. Wicecarver at (703) 604-9044 (DSN 664-9044) (jwicecarver@dodig.osd.mil) or Ms. Kathryn M. Truex at (703) 604-9045 (DSN 664-9045) (kmtruex@dodig.osd.mil). See Appendix E for the report distribution. The audit team members are listed inside the back cover.

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Report No. D-2000-079
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February 24, 2000

Summary of the DoD Process for Developing Quantitative Munitions Requirements

Executive Summary

Introduction. This report summarizes 20 audit reports and also analyzes recently issued studies and memorandums pertaining to the DoD process for developing quantitative munitions requirements. The auditors summarized reports and studies on the process from June 1994 through November 1999.

Objectives. The overall objective was to summarize audits of the munitions requirements determination process that were performed during the last 5 years by the General Accounting Office; the Inspector General, DoD; and the Military Departments. We included analyses of systemic problems that were identified in the reports, studies, and memorandums. We reviewed changes to overall guidance, the phased threat distribution development process, and the capabilities-based munitions requirement process resulting from the audits. We reviewed the management control program as it related to the overall objective.

Results. We identified systemic problems in the following areas:

- Development, use, and validation of the *Outyear Threat Report* and the phased threat distribution;
- Inconsistency of processes among and between the Services;
- Use and validation of modeling assumptions (factors);
- Unclear guidance;
- Verification, validation, and accreditation of the Service models used in the requirement determination process; and
- Use of required data formats.

The conditions were identified in prior reports, studies, and reviews of the process for developing quantitative munitions requirements. However, significant changes had not occurred in response to the prior recommendations from oversight organizations. For details of the audit results, see the Finding section of the report. See Appendix A for details of the review of the management control program.

Summary of Recommendations. We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics, in coordination with the Director, Joint Staff, designate a central authority that will be accountable for: updating munitions requirements guidance and continually overseeing the execution of such established policy by the Services and Special Operations Command to include, assessing and validating the currency of planning scenarios and utilization factors.

Management Comments. We issued a draft of this report on December 6, 1999. Management did not comment on a draft of this report. Therefore, we request the Under Secretary of Defense for Acquisition, Technology, and Logistics, and the Director, Joint Staff, to provide written comments by March 24, 2000.

Table of Contents

Executive Summary	i
Introduction	
Background	1
Objectives	2
Finding	
The Munitions Requirements Process	3
Appendixes	
A. Audit Process	
Scope	11
Methodology	11
Management Control Program	12
B. Prior Coverage	13
C. Combat Munitions Data Formats	22
D. Modeling Assumptions (Factors)	24
E. Report Distribution	25

Background

The General Accounting Office, Inspector General, DoD, and the Military Departments issued 20 audit reports from June 14, 1994, through September 3, 1999, on the determination process of the Military Departments for munitions requirements. See Appendix B for a summary of these reports.

Munitions requirements for the cold war and post-cold war are distinctly different. In April 1993, the minutes of the Joint Requirements Oversight Council on munitions stated, in part, that "Requirements...are so small that they cannot be distributed correctly or proactively. We need an alternative to munitions requirements determination based only on the threat." Thus, the capabilities-based munitions requirements (CBMR) began a paradigm shift from munitions expenditure to equipping the force structure whether or not munitions will be expended. The figure below shows some of the differences.

	Pre-CBMR	CBMR
Force balance	Problematic	United States superior
Conflict scope	Global	Regional
Number of targets	High	Air: Low Ground: Medium
Munitions expenditures	Very high	Low
Munitions inventory rationale	Expenditures	Expenditures for some, equipping force structure for others

Changes Affecting Munitions Requirements

The CBMR process identifies procedures that the Military Departments and the Special Operations Command (SOCOM) must follow to establish munitions requirements to support the DoD Planning, Programming, and Budgeting System.¹ The CBMR process evaluates munitions procurements for adequacy, consistency, and appropriateness. DoD Instruction 3000.4, "Capabilities-Based Munitions Requirements (CBMR) Process," June 16, 1997, established procedures for military planners on which to base the estimated munitions requirements to defeat specified threats within a given force structure. The CBMR process requires that the Commanders in Chief of the combatant commands develop and assign responsibility for responding to projected outyear threats to the Services and SOCOM. The threats are based on the warfighting concept of operations articulated in the *Defense Planning Guidance*.

DoD Guidance. DoD Instruction 3000.4 directs the Military Departments and SOCOM to determine munitions procurement requirements in accordance with

¹The DoD Planning, Programming, and Budgeting System is a cyclic process that provides a formal, systematic structure for making decisions on policy, strategy, and developing forces and capabilities to accomplish anticipated missions.

the most recent edition of the *Defense Planning Guidance*, provide munitions data according to required formats, and submit a detailed description of the methodology used to compute those requirements.

Munitions Requirements Determinations. The Services and SOCOM determine war reserve munitions requirements² for each scenario by considering wartime consumption rates and the policy to arm committed forces to the designed military capability³ of the systems. The Services and SOCOM base combat requirements on the phased threat distributions of the Commanders in Chief (CINCs) and use the Defense Intelligence Agency *Outyear Threat Report* as the authoritative threat estimate of wartime consumption. Combat requirements are the quantity of munitions that are required to equip a specified force structure to its designed military capability and to meet CINC requirements for the decisive defeat of the enemy. The residual readiness requirement is the quantity of munitions needed in a post-major theater of war to provide combat capability for forces that are committed to *Defense Planning Guidance* scenarios. The strategic readiness requirement is the quantity of munitions needed to arm forces that are not committed to support combat operations in the assigned major theaters of war. The strategic readiness requirement includes additional munitions requirements that are needed to meet treaty or statutory obligations to allies. Finally, the Services and SOCOM develop the training, testing, and current operational requirements for each munition, which, with the war reserve requirement, is the total munitions requirement.

Objectives

The overall objective was to summarize audits performed during the last 5 years by the General Accounting Office, Inspector General, DoD, and the Military Departments. Specifically, the summary includes analyses of systemic problems that were identified in the reports, studies, and memorandums. We reviewed changes to guidance, the phased threat distributions development process, and studies of the munitions requirement generation process. See Appendix A for a discussion of the audit scope and methodology, the organizations visited and contacted, and the material management control weakness identified during the audit. See Appendix B for prior coverage related to the audit.

²War reserve munitions requirements are the sum of combat, residual, and strategic readiness requirements.

³Designed military capability does not mean that every system must be filled to design capacity unless warranted by the threat or the nature of the operational requirement.

The Munitions Requirements Process

The Military Departments consistently failed to follow the guidance, either direct or implied, in DoD Instruction 3000.4, "Capabilities-Based Munitions Requirements Process," June 16, 1997, because the guidance was ambiguous, outdated, and did not reflect operational realities to which the combatant commands must respond. Additionally, DoD has no central authority across the CINCs and Services to effect the necessary changes. Twenty reports (Appendix B) show that systemic issues exist in the following areas:

- Development, use, and validation of the *Outyear Threat Report* and the phased threat distribution; (9 reports)
- Inconsistency of processes among and between Services; (13 reports)
- Use and validation of the modeling assumptions (factors); (7 reports)
- Unclear guidance; (3 reports)
- Verification, validation, and accreditation of Service models used in the requirement determination process; and (5 reports)
- Use of required data format. (3 reports)

As a result, DoD used an ad hoc methodology to expend an average of about \$5.2 billion annually for FYs 1998 through 2001 to support the warfighter's munitions requirements. Munition requirements were about 10 percent of the Defense Department annual procurement budget of \$209 billion⁴ for FYs 1998 through 2001.

Accountability and Validation of Process

The calculation of munition requirements is a complex process because the Services and SOCOM must consider a plethora of information and anticipate a seemingly infinite number of scenarios. While it is commendable that the DoD recognized the need for guidance to structure the munition requirements generation process, it achieved marginal success in complying with the intent of DoD Instruction 3000.4. There continues to be a lack of accountability and ongoing management oversight by a central DoD office to validate the Services' implementation of the munitions requirements determination process. Further, DoD had not assessed and applied the specific lessons learned from military operations since Desert Storm and the current daily operating tempo as it pertains to the CBMR process. (See Reports 1, 2, 3, 4, and 10 in Appendix B.)

⁴This dollar amount does not include research, development, test and evaluation, spare parts, life-cycle cost, and operations and maintenance.

Outyear Threat Report and Phased Threat Distribution

Outyear Threat Report. DoD Instruction 3000.4 requires the Defense Intelligence Agency to deliver either a new or updated *Outyear Threat Report* by April 1 of each year to support development of the CINCs phased threat distributions. However, within 3 months during 1999, the guidance from the Under Secretary of Defense for Acquisition, Technology, and Logistics and the JCS to the Defense Intelligence Agency changed four times. The Under Secretary of Defense for Acquisition, Technology, and Logistics told the Defense Intelligence Agency not to develop a 2002 *Outyear Threat Report*, that the 2001 report could be used instead. Then the Under Secretary of Defense for Acquisition, Technology, and Logistics asked the Defense Intelligence Agency to revalidate the 2001 report. Subsequently, the Joint Staff asked the Defense Intelligence Agency for a new *Outyear Threat Report* for 2002. While the Defense Intelligence Agency was developing the report, JCS asked it to redefine the *Outyear Threat Report* and provide detailed target and coordinates information. In 1998, a review of the capabilities-based munitions requirements expanded the Defense Intelligence Agency responsibilities for the *Outyear Threat Report* to include coordination among the Services, SOCOM munitions requirement offices, and the combatant commands. Further, the review determined that the *Outyear Threat Report* would include the location of targets and a designator to identify known priority targets. The Defense Intelligence Agency restructured the 2002-2005 *Outyear Threat Report*, but stated that it perceived a trend to reconfigure the document into something well beyond its original purpose. Although the Defense Intelligence Agency is fully committed to supporting the CBMR process, it suggested, after the 2002 CBMR cycle, that there be a meeting to determine whether and how the *Outyear Threat Report* function and structure should be changed.

The *Outyear Threat Report* was established to provide information at the strategic tier level. The Defense Intelligence Agency coordinates the report with the Intelligence Offices from each Service and the combatant commands to ensure that both quantitative and qualitative aspects of threat doctrine and capabilities are included and passes those planning considerations on to the Services. DoD Instruction 3000.4 states that the CINCs will use, among other information, the *Outyear Threat Report* to develop the phased threat distributions. The Army, the Marine Corps and SOCOM did not fully use the *Outyear Threat Report*, although the DoD Instruction 3000.4 states that the Services and SOCOM will use it as the authoritative threat estimate to develop wartime consumption projections. (See Reports 1, 6, 7, and 9 in Appendix B.)

Phased Threat Distribution. DoD Instruction 3000.4 states that the Military Departments and SOCOM shall base the calculation of combat requirements on the CINCs phased threat distributions and use the Defense Intelligence Agency's *Outyear Threat Report* as the authoritative threat estimate to evaluate wartime consumption. As reported in prior audit coverage, the Army, Marine Corps, and SOCOM did not fully use the phased threat distributions. (See Reports 1, 6, 7, 9 and 11 in Appendix B.)

Existing Guidance. DoD Instruction 3000.4 states that the Commanders of the combatant commands shall develop a phased threat distribution using the concept of operations for the theater, considering the tasking of the Joint Strategic Capabilities Plan, the Defense Intelligence Agency *Outyear Threat Report*, and the Illustrative Planning Scenarios. The guidance further states that JCS shall validate the phased threat distribution before it is released to the Services and SOCOM.

Development Process Change. The 1998 *Defense Planning Guidance* directed an existing joint working group⁵ (the Group) to review the capabilities-based munitions requirements process. Specifically, the Group was to examine the feasibility of modifying CBMR responsibilities and procedures, including reducing the CINCs analytical workload. The Group issued a memorandum, October 14, 1998, to the Under Secretary of Defense and the Principal Deputy Under Secretary for Acquisition, Technology, and Logistics, which outlined the corrective actions taken in response to the *Defense Planning Guidance* request. In 1999, the Group changed the responsibility for development of the phased threat distributions, plus additional duties, from the CINCs to the JCS. Specifically, the JCS, in collaboration with the CINCs, was to develop the phased threat distributions, develop the theater-specific planning factors, and identify the post-major theater of war missions. Finally, the memorandum stated that the Group would submit a revised CBMR Instruction, reflecting the changes from the *Defense Planning Guidance* and Program Decision Memorandum-1, for approval in March or April 1999. As of February 24, 2000, no revised instruction had been issued.

Validation of Phased Threat Distribution. The transfer of responsibility for developing the phased threat distribution to the JCS eliminated the validation mechanism in place for that information. DoD Instruction 3000.4 required the Chairman of the Joint Chiefs of Staff to validate and assess the phased threat distributions and the operational planning factors developed by the CINCs. The transfer action effectively eliminated the separation of duty between the development and the validation process. (See Reports 10 and 11 in Appendix B.)

Consistency of Processes

The DoD Instruction 3000.4 provides guidance for the Military Departments and SOCOM to follow in determining munitions requirements. However, the Services and SOCOM continued to use different processes to calculate the requirements. The Group was to examine the feasibility of increasing the use of common parameters and inputs, such as regeneration rates, in Service models by December 1998. As of November 24, 1999, this suspense had not been met.

⁵The existing joint working group consisted of Under Secretary of Defense for Acquisition, Technology and Logistics the Director, Program Analysis and Evaluation; and the Chairman of the Joint Chiefs of Staff.

The representative for the Under Secretary of Defense for Acquisition, Technology, and Logistics stated the group was still working on the use of common parameters and inputs in the Service models.

A 1999 Program Analysis and Evaluation study stated that the CBMR allows the Services and SOCOM wide latitude in applying guidelines, in choosing alternative methodologies, and in using varied parameters and inputs. The study provided the following examples of inconsistencies:

- Two of the four Services did not include combat losses⁶ in determining munitions requirements;
- Three Services did not include a munitions process to re-supply platforms;
- Three Services did not add current operational requirements to the total munitions intended for procurement; and
- Every Service had a different interpretation and calculation for residual and strategic readiness munitions requirements.

The inconsistencies amongst the Services⁷ processes contributed to potential misstatements of munition requirements. Additionally, the procured munitions potentially did not fully satisfy the operational realities to which the combatant commands must respond. (See Reports 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, and 20 in Appendix B.)

Modeling Assumptions (Factors)

The Services and SOCOM did not validate modeling assumptions (factors) before using them in the munitions requirements generation process. The 1998 requirement calculations by the Services used approximately 16 assumption factors⁸ that might be encountered during a war. (SOCOM used assumptions pertaining to mission duration days, percent of missions, and the number of items per mission, rather than any of those used by the Services.) Each Service used one or more of those factors to calculate munitions requirements and each Service determined the percentage of the factor(s) to apply. The Services and SOCOM were lax in their efforts to validate the assumptions, which materially affected the quantities of munitions procured. The following are examples of assumptions (factors) that the Services used in their modeling processes.

⁶This factor was chosen from a variety of wartime modeling factors that are not treated uniformly among the Services. Appendix D lists these factors.

⁷The 1999 Program Analysis and Evaluation study did not include SOCOM in its review; however, prior audit work identified that its process differed from the Services'.

⁸See Appendix D for the Modeling Assumptions.

Regeneration of Enemy Targets. The regeneration of enemy targets accounts for large numbers of munitions requirements and the Army, Navy, and Air Force include this factor in their modeling processes. The Services apply a range of more than 150 percent for the regeneration of enemy targets. In 1997 and 1998 and the first half of 1999, Defense Intelligence Agency representatives stated that the appropriate factor for the regeneration of enemy targets was zero; however, the Services continued to apply various multiples as an uncertainty factor in their munitions requirements processes.

Suspect or False Targets. The suspect or false target uncertainty factor assesses the instances in which the Services would expend munitions on the wrong target. Although suspect or false targets may be valid additives to the modeling process, validation should be performed by an independent office. For example, there is an 80 percent range within one Service for this factor. There have been no efforts to examine the validity of this uncertainty of war factor or to establish a common use among the Services and SOCOM.

Onboard or Combat Losses. The onboard or combat munition loss factor includes those that are destroyed or damaged by friendly weapon systems and are not necessarily a result of conflict. The different ranges of this assumption could not be determined. However, the Services, SOCOM, and Office of the Secretary of Defense management did not examine the validity of this factor or establish a common use.

Support for Assumptions. The Services could not provide documentation to support the percentages that they used for their modeling assumptions. Further, the Office of the Secretary of Defense management, defined in DoD Instruction 3000.4, did not comment on or validate the use of the factors by the Services. The Office of the Under Secretary of Defense (Comptroller/Chief Financial Officer), Program Analysis and Evaluation, stated that the CBMR allows the Services a wide latitude in applying guidelines and in choosing alternative methodologies. As a result, the Service calculations were inconsistent. (See Reports 2, 5, 6, 8, 9, 10 and 12 in Appendix B.)

Guidance

The guidance for CBMR is ambiguous. It does not provide standards of acceptable risk, provide the basis for current operational requirements, and define certain wording clearly.

Standards of Acceptable Risk. The guidance does not define what standards of risk are acceptable for the Services and SOCOM to use when they are determining munitions requirements. In fact, DoD Instruction 3000.4 states that the "fielded force (or fleet) may execute its operational mission with all weapons without undue risk;" however, the Instruction does not define risk.

Clear Definitions. DoD Instruction 3000.4 does not provide the Services and SOCOM with clear and measurable definitions. For example, the criteria state that the Services and SOCOM will determine residual readiness requirements

without defining them. Further, the guidance did not specify what types of missions are allocated to operational missions and what measurement or standard should be applied to the Services and SOCOM for determining munitions requirements for operational flexibility. Finally, the Services and SOCOM did not receive the specific missions to calculate munitions quantities for current operational requirements.

Specific and Measurable Guidance. Without specific and measurable guidance, the Services and SOCOM were left to their own interpretations, thereby, creating inherent inconsistencies. Three of the 20 reports summarized in Appendix B specifically addressed the ambiguity of the CBMR guidance, as did the 1999 Program Analysis and Evaluation study. Additionally, the questionable munition requirements addressed in the other reports in Appendix B are a testament to the inadequacies of the guidance. (See Reports 10, 11, and 13 in Appendix B.)

Certified Models

The Services and SOCOM did not verify, validate, and accredit the models used to develop munitions requirements; therefore, we could not determine their effect on the quantities calculated by the Services. DoD Directive 5000.61, "DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A)," April 29, 1996, requires that DoD Components establish validation, verification, and accreditation policies and procedures for modeling and simulation. Some of the models used for determining munitions requirements were developed before DoD Directive 5000.59, "DoD Modeling and Simulation (M&S) Management," January 4, 1994, and DoD Directive 5000.61 were established. DoD should consider the impact on not validating the Services and SOCOM models that were developed before the guidance as well as verify and validate the more recent models. The Services also use analytical procedures in conjunction with their models when they calculate quantitative requirements. The analytical procedures have a direct and significant impact on the final calculation of requirements. (See Reports 5, 6, 7, 8, and 9 in Appendix B.)

Data Formats

The Army, Marine Corps, and SOCOM did not fully comply with guidance by providing the capabilities-based munitions requirements in the format specified in DoD Instruction 3000.4. The Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics stated that it reviews the Services and SOCOM CBMR data. It is not clear what guidance or training, if any, that the Under Secretary of Defense for Acquisition, Technology, and Logistics provided to the Services and SOCOM so that they would comply with the format requirements. For example, SOCOM did not provide a detailed explanation of the assumptions as specified in DoD Instruction 3000.4, but the

Under Secretary of Defense for Acquisition, Technology, and Logistics never asked or instructed SOCOM to provide that information. Instead, SOCOM was told that "they did a good job." SOCOM agreed with an Inspector General, DoD, audit report recommendation to provide detailed explanations of the assumptions used in its process for determining munitions requirements. (See Reports 6, 7, and 9 in Appendix B.)

Effect on the Budget

Munitions procurement accounts for approximately 10 percent of the Defense Budget. The result from the CBMR process is that a portion of the Defense Department annual procurement budget is spent for munitions that may not fully satisfy the needs of the warfighter.

Conclusion

The DoD recognized the need for guidance to structure the munitions requirements generation process. However, DoD achieved marginal success in implementing the full intent of the DoD Instruction 3000.4 because DoD had no central authority who was accountable to ensure that the guidance was clear and that implementation was consistent among the Services. The DoD must address the CBMR process and the way munitions requirements are calculated and procured to satisfy the everchanging tactics and needs of the warfighter. During the last 5 years, the GAO and the Inspector General, DoD, have identified problems and proposed corrective actions. DoD generally agreed to improve the process but has yet to do so. The requirements determination process must produce a reasonable estimate of individual munitions requirements to best allocate limited budget resources to those requirements. The requirements determination process must be continually adjusted to reflect the changing tactics, doctrine, and needs of the warfighters. Given the environment of today, both actual and projected, factors that are used in the requirements determination process that predate the end of the cold war, should be reassessed in view of lessons learned from Desert Storm and current operational mission requirements. Further, unless DoD exercises adequate ongoing oversight, the CBMR process will neither improve nor support dynamic mission needs.

Recommendations

We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics, in coordination with the Director, Joint Staff, designate a central authority that will be accountable for:

1. Updating munitions requirements guidance; and
2. Continually overseeing the execution of such established policy by the Services and SOCOM to include, assessing and validating the currency of planning scenarios and utilization factors.

Management Comments Required

The Under Secretary of Defense for Acquisition, Technology, and Logistics, and the Director, Joint Staff, did not respond to the draft of this report. We request the Under Secretary of Defense for Acquisition, Technology, and Logistics, and the Director, Joint Staff, provide comments on this final report.

Appendix A. Audit Process

Scope

We conducted this program audit from June through November 1999 and reviewed data from April 1992 through September 1999. Munitions requirements for DoD are approximately 10 percent of the Defense budget. We reviewed the capabilities-based munitions requirements process, recent studies, and memorandums pertaining to the DoD process to develop quantitative munitions requirements. Additionally, we summarized 20 reports by the General Accounting Office; Inspector General, DoD; and the Army Audit Agency on DoD munitions requirements.

DoD-Wide Corporate Level Government Performance and Results Act (GPRA) Coverage. In response to the GPRA, the Secretary of defense annually establishes DoD-wide corporate level goals, subordinate performance goals, and performance measures. This report pertains to achievement of the following goal, and performance measure:

FY 2001 DoD Corporate Level Goal 2: Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. Transform the force by exploiting the Revolution in Military Affairs, and reengineer the Department to achieve a 21st century infrastructure. **(01-DoD-2) FY 2001 Subordinate Performance Goal 2.2:** Transform U.S. military forces for the future. **(01-DoD-2.2) FY 2001 Performance Measure 2.2.1:** Annual Procurement Spending. **(01-DoD-2.2.1)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas within DoD. This report provides coverage of the Defense Inventory Management high risk area.

Methodology

Methodology. We analyzed 20 reports from the General Accounting Office; DoD, Inspector General; and the Army Audit Agency that directly relate to the requirements determination process.

Computer-Processed Data. We relied on Office of the Secretary of Defense briefings and Defense Intelligence Agency analysis and assessments. We did not verify the accuracy of the data. However, data validity would not affect our audit conclusions because we focused on the process and not on the data.

Sampling Procedures. We did not use any sampling procedures to determine the audit results.

Technical Assistance. We did not obtain technical assistance from operations research analysts, Office of the Inspector General, DoD.

Audit Type, Dates and Standards. We performed this economy and efficiency audit from June 1999 through November 1999. The audit was conducted in accordance with auditing standards issued by the Comptroller of the United States, as implemented by the Inspector General, DoD.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available on request.

Management Control Program

DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, requires DoD organizations to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of the Review of the Management Control Program. We reviewed the adequacy of management controls as they relate to the determination of munitions requirements. We included tests of management controls that we considered necessary to satisfy the audit objectives. Specifically, we reviewed the management controls for planning, developing, and documenting the requirements generation processes.

Adequacy of Management Controls. Based on eight reports with incomplete corrective actions, we identified a material management control weakness in the procedures to generate quantitative requirements for munitions, as defined by DoD Directive 5010.38. The munitions requirements process continues to lack accountability and ongoing management oversight to validate the Services and SOCOM implementation of overall policy. The recommendations in the report, if implemented, will improve the management controls for developing munitions requirements. A copy of this report will be provided to the senior officials responsible for management controls at Office of the Secretary of Defense.

Adequacy of Management's Self-Evaluation. The Under Secretary of Defense for Acquisition, Technology, and Logistics did not identify the requirements determination process as an assessable unit.

Appendix B. Prior Coverage

During the last 5 years, the GAO has issued 4 audit reports, the Inspector General, DoD, has issued 15 audit reports, and the Army has issued 1 audit report on the munitions requirements. Summaries of reports 1, 6, 8, 9, 10, 11, 13, 15, 16, 17, 18, 19, and 20 in this appendix have unclassified information that was extracted from classified Secret documents. The information in this appendix when extracted from the overall classified Secret documents, by itself, is unclassified.

1. Inspector General, DoD, Report No. 99-248, "Air Force Munitions Requirements," September 3, 1999. Twenty-nine audit sample items were reviewed from a universe of 41 items from the Air Force FY 2000 through 2006 CBMR. The DoD Instruction 3000.4 is ambiguous for residual readiness requirements; however, the Air Force calculation did not meet the intent of the Instruction. The Air Force used outdated or undocumented assumptions and inadequate processes to generate munitions requirements because it did not validate the assumptions and did not follow guidance. Five recommendations were made to address these concerns. Systemic issues on the Service processes that have yet to be adequately addressed are discussed in the Finding section of this report.⁹

2. GAO Report No. GAO/NSIAD-99-105 (OSD Case No. 1786), "DEFENSE ACQUISITIONS: Reduced Threat Not Reflected in Antiarmor Weapon Acquisitions," July 22, 1999. The Chairman, Subcommittee on Defense, Committee on Appropriations, House of Representatives, questioned whether the antiarmor acquisition plans were appropriate at a time when potential adversaries have smaller armored forces than during the cold war. The GAO found that the overall size of DoD antiarmor weapons inventory was approximately the same as during the cold war, and that inventories of the more sophisticated and lethal antiarmor weapons had actually increased. There were 35 different types of antiarmor weapons in the inventory and 10 other types in production. While today's inventory weapons are similar to those in the 1990 inventory, the 10 new weapons were expected to provide improved targeting, lethality, and survivability capabilities developed in response to the anticipated future tank threat. DoD estimated that it will spend \$11.1 billion in total procurement funding to acquire the 10 antiarmor weapons in production, which includes \$4.2 billion for FYs 2000 through 2003. In addition, DoD was developing nine new antiarmor weapons at an estimated cost of \$3.5 billion. The procurement costs for six of the nine new programs had not yet been determined, but the remaining three had an estimated procurement cost of about \$4.7 billion. Plans to acquire large quantities of new and improved antiarmor weapons were not consistent with the reduced size of the armored threat and the existing large and capable inventory of antiarmor weapons. The GAO did not make recommendations in its report.

⁹Report 1 has unclassified information that was extracted from a classified Secret document. This information when extracted from the overall classified Secret document, by itself, is unclassified.

3. Inspector General, DoD, Report No. 99-150 "U.S. Special Operations Command Munitions Requirements," May 10, 1999. Thirty audit sample items were reviewed from a universe of 71 items from SOCOM 1998 CBMR submission. The sample items were incorrectly reported in one or more requirement categories. SOCOM did not identify munition expenditures by target category identified in the *Outyear Threat Report* and the phased threat distributions, did not use the CINCs phased threat distributions, did not provide information in the required format, did not fully comply with DoD guidance, did not validate assumptions, and did not validate processes and requirements of the Component commands. Further, SOCOM did not document the assumptions that the Component commands used in their munitions determination process. SOCOM may not have been meeting the operational objectives of the Commanders in Chief and potentially may have misstated munitions requirements for FYs 1998 through 2003. SOCOM potentially misestimated its munitions requirements and did not meet the CINCs operational objectives. The report made four recommendations to address these concerns. Systemic issues on the Service processes that had yet to be adequately addressed were discussed in the Finding section of this report.

4. Inspector General, DoD, Report No. 99-051 "Marine Corps Quantitative Munitions Requirements Process," December 10, 1998. The audit objective was to evaluate the models and assumptions that the Marine Corps used to generate munitions requirements in support of the CBMR. The Marine Corps used two different methods to determine its munitions quantities. Additionally, the Marine Corps did not reconcile the differences in quantities determined by the methods; did not use the Commanders in Chief (CINCs) phased threat distributions; did not submit requirements data in the required format; and did not independently verify, validate, and accredit the requirements generations models. As a result, the Marine Corps potentially misestimated its munitions requirements and did not meet the CINCs operational objectives. Two recommendations were made to address these concerns. Systemic issues on the Service processes that had yet to be adequately addressed were discussed in the Finding section of this report.

5. GAO Report No. NSIAD-99-32 (OSD Case 1671-X), "WEAPONS ACQUISITIONS: Guided Weapon Plans Need to be Reassessed," December 9, 1998. The DoD plan to increase procurement spending for guided weapons was based on overly optimistic funding projections. Although DoD had enough deep attack weapons (guided and unguided) in its inventory to meet national objectives, the Services planned to add 158,800 guided weapons. Most of the weapons being developed or improved were unique to each Service. When reviewing the Services' planned programs in the aggregate, GAO found widespread overlap and duplication of guided weapon types and capabilities, questionable quantities being procured for each target class, and a preference for longer standoffs and more accurate weapons when other options might be as effective and cost less. The DoD oversight of the Services' guided weapons programs had not prevented inflated requirements or program overlap and duplication. The GAO made three recommendations to include that the DoD establish an aggregate requirement for deep attack capabilities; reevaluate the assumptions used in guided weapon requirements determination processes to better reflect the new international situation, realistic target sets, enhanced weapon effectiveness, proper weapon selection, and the use of advanced tactics; and reevaluate the planned guided weapon acquisition programs in light of existing capabilities and the

current budgetary and security environments to determine whether the procurement of all planned guided weapon types and quantities was necessary and cost-effective in the aggregate and could clearly be carried out as proposed within realistic, long-term projections of procurement funding.

6. Inspector General, DoD, Report No. 99-043, "Navy Quantitative Requirements for Munitions," December 3, 1998. The overall audit objective was to evaluate the models and assumptions that the Navy used to generate munitions requirements in support of the CBMR process. The Navy did not fully comply with the CBMR process, validate the modeling factor rates used in the Navy Non-Nuclear Ordnance Requirements software system, and verify, validate, or accredit the models used to develop its quantitative munitions requirements. The audit identified a potential requirements overstatement for seven of the audit sample items. The report made three recommendations to include that the Navy limit munitions requirements to the war reserve requirement and testing, training, and current operational requirements; reassess the factors used in the requirements generation models for uncertainties of war; and verify, validate, and accredit the models that the Navy used in its requirements generation process. Systemic issues on the Service processes that have yet to be adequately addressed are discussed in the Finding section of this report.¹⁰

7. Army Audit Agency, Report No. AA-98-285 "Reforming Ammunition Procurement - Phase II," August 27, 1998. The Army Audit Agency reviewed the ammunition procurement processes and procedures to determine ammunition requirements, develop annual ammunition procurement programs, and assess the need for maintaining the ammunition industrial base. Although the Army had made several improvements to the ammunition requirement process, the calculations the Army used to determine war reserve requirements caused unnecessary procurement of ammunitions and tied up future budget authority. The Office of the Deputy Chief of Staff for Operations and Plans did not use accurate calculations to determine requirements; did not accurately forecast ammunition losses due to testing ammunitions stockpiles and weapons systems; and did not consider all its customers' requirements when assessing the need to retain production facilities. The audit identified that one of the items analyzed was overstated by about \$70.3 million for the war reserve requirements. The Deputy Chief of Staff for Operations and Plans established an ammunitions working group to address issues identified, internally and by other organizations, to ensure that ammunitions requirements were more realistic and agreed to implement all the recommendations. Army Audit Agency stated that all recommendation were implemented and monetary benefits of \$70.3 million were realized.

8. Inspector General, DoD, Report No. 98-167 "Army Quantitative Requirements for Munitions," June 26, 1998. The overall audit objective was to evaluate DoD models in generating quantitative requirements for munitions and specifically the models and assumptions that the Army used to generate munitions requirements. For the FY 2003 requirements process (accomplished in FY 1996), the Army improved its process for generating quantitative requirements for munitions and implemented procedures to continually assess the reliability of generated requirements; however, the Army could further improve its process for generating quantitative requirements by reconciling its threat distributions with those developed by the CINCs for the major

¹⁰Reports 6 and 8 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

theaters of war; improve modeling procedures used to generate munitions requirements; and document the rationale used to generate requirements for nonmodeled munitions. The FY 2003 process was not fully effective because the Army Ammunition Requirements Working Group did not recommend that the Army validate threat distributions used to generate munitions requirements; verify, validate, and accredit its requirements generation model; and establish standardized procedures for generating requirements for non-modeled munitions. The Army used a highly subjective process to determine quantitative requirement estimates for munitions during the FY 2003 study and did not fully provide the information in the required format. However, for FY 2005, the Army planned to provide a more objective process for requirements estimates to correct the highly subjective process used for FY 2003. Five recommendations were made to address these concerns. Systemic issues on the Service processes yet to be adequately addressed are discussed in the Finding section of this report.¹¹

9. Inspector General, DoD, Report No. 98-160 "Management Oversight of the Capabilities-Based Munitions Requirements Process," June 22, 1998. The objective was to evaluate the management oversight of the CBMR process. Although DoD instructed the CINCs and the Services to establish a common approach to determine quantitative munitions requirements; implementation had systemic weaknesses. The validations, assessments, and reviews of the 1997 capabilities-based munitions requirements, process performed by the Joint Staff and the Director, Program Analysis and Evaluation, did not fully comply with the established guidance. In addition, the Office of the Under the Secretary Of Defense for Acquisition, Technology, and Logistics did not ensure that the combatant commands and the Services complied with the documentation timelines and data formats. The Services did not procure the right mix (type or quantity) of weapon systems and opportunities to positively impact the budget process were missed. Effective management oversight is necessary for more accurate munitions requirements determination. The report recommended that the Joint Staff establish validation and assessment procedures and document the results to comply with DoD Instruction 3000.4; that the Director, Program Analysis and Evaluation, analyze the quantitative munitions requirements of the Services and identify common methodologies and statistical values for the Services to use in the requirements generation process; and that the Under Secretary of Defense for Acquisition, Technology, and Logistics provide necessary oversight to ensure that the participants in the CBMR process follow the established timelines and required data formats. The Joint Staff agreed to develop written procedures for areas under Joint Staff purview; prepare written validations of the CINCs phased threat distributions; and document resolution of discrepancies found during the validation and assessment of the phased threat distributions subsequent ad hoc revisions to the CBMR process made the recommendations and concurrence irrelevant. The Under Secretary Of Defense for Acquisition, Technology, and Logistics agreed to amend the CBMR instruction to outline the tasks and timelines of the process but has not yet done so. The Acting Director, Program Analysis and Evaluation agreed to conduct a study to examine requirements for selected munitions and to suggest possible revisions to the CBMR directive toward improving methodologies and to undertake, as appropriate, and as time and resource constraints permit, the identification of opportunities to develop and

¹¹Reports 8 and 9 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

improve common methodologies and statistical values. An informal study without recommendations was completed in June 1999. Systemic issues on the Service processes that have yet to be adequately addressed are discussed in the Finding section of this report.¹²

10. Inspector General, DoD, Report No. 98-092 "Threat Distributions for Requirements Planning at U.S. Central Command and U.S. Forces Korea," May 20, 1998. The CBMR process identifies procedures that the Military Departments and SOCOM must follow to establish munitions requirements. The CBMR process requires that the CINCs of the combatant commands distribute outyear threats to the Services based on their warfighting concept of operations. U.S. Central Command and U.S. Forces Korea made improvements in the CBMR process since prior GAO and DoD Inspector General reports were issued. However, more needed to be done to improve the threat distribution input provided to the Services for generating munitions requirements. In October 1998, the responsibility for developing the phased threat distribution was informally transferred from the CINCs to the Joint Chiefs of Staff thereby made the report recommendations and implementing action irrelevant. Systemic issues on the Service processes yet to be adequately addressed are discussed in the Finding section of this report.

11. Inspector General, DoD, Report No. 96-176 "Army's and Marine Corps' Quantitative Requirements for Blocks I and II Stinger Missiles," June 25, 1996. The Army's and Marine Corps' processes for determining quantitative requirements for the Block I and Block II Stinger missiles were not fully effective and therefore, the requirements for Blocks I and II Stinger missiles were overstated. The report recommended that the Army and Navy recalculate the quantitative requirements for the Block I and II missiles which was done.

12. GAO Report No. GAO/NSIAD-96-72 (OSD Case 1075), "U.S. Combat Air Power - Reassessing Plans to Modernize Interdiction Capabilities Could Save Billions," May 13, 1996. The Services had aggregate forces capable of hitting interdiction targets in numerous overlapping, often redundant, ways during two major theaters of war. The Services designated at least 10 ways to hit nearly 65 percent of the expected ground targets, and some targets could be hit by 25 or more combinations of aircraft, missiles, bombs, or precision-guided munitions. The Services' modernization plans would increase to more than 85 percent the number of targets that could be hit 10 or more ways. GAO recommended that the Secretary routinely review service modernization proposals, based on how they would enhance the aggregate ability of the U.S. military to perform the interdiction mission. Additionally, GAO recommended that Service proposals that add redundancy should be examined in the context of the additional interdiction capability offered. DoD agreed that the Secretary of Defense should routinely review service modernization proposals based on how they would enhance the current aggregate capability of the military to perform the interdiction mission. DoD agreed to make changes to the existing processes for review of the service modernization proposals rather than institute a new process. The DoD stated that the Services already prioritize their programs within funding constraints to ensure that those requirements necessary to meet stated warfighting needs are

¹²Reports 9, 10, and 11 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

adequately funded and that the Service budgets are reviewed by the Office of the Secretary of Defense, the Joint Requirements Operational Council, and Joint Staff to ensure the needs of the warfighter are met without unnecessary redundancy and within budget constraints.

13. Inspector General, DoD, Report No. 95-265 "Summary Report on the Audits of the Anti-Armor Weapon System and Associated Munitions," June 29, 1995.

The report summarized five audits regarding processes used within DoD to determine quantitative requirements for anti-armor systems and associated munitions. The report also addressed issues that were not addressed in the five previous reports. The previous audits showed that the Services' processes for determining quantitative requirements for anti-armor munitions were inconsistent or inaccurate. The Services overstated their quantitative requirements for anti-armor munitions as a result of those inconsistencies and inaccuracies. Of the \$15.5 billion in overstated requirements, the Services planned to acquire \$1.2 billion of the munitions during FYs 1996 through 2001 and an additional \$5.9 billion after FY 2001. The DoD initiated efforts to develop an instruction for the Services to use in determining their quantitative requirements. The report addressed the systemic issues developed in the reports on the Services processes for determining quantitative requirements for anti-armor systems and munitions. The report recommended that the proposed DoD Instruction 4100.41, "Capabilities-Based Munitions Requirements (CBMR) Development," July 21, 1995, include more specific guidance on the critical portions of the methodology that should be used to calculate quantitative requirements for munitions and include guidance to the CINCs for determining threat distributions for the Services. The Director, Strategic and Tactical Systems, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, disagreed with the recommendations to provide the Services more specific guidance on generating quantitative requirements. The Director generally agreed with the recommendation to provide the CINCs with additional guidance to develop threat distributions. The Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics issued DoD Instruction 3000.4, "Capabilities-Based Munitions Requirements (CBMR) Process," June 16, 1997, but did not add the specificity recommended.¹³

14. GAO Report No. GAO/NSIAD 95-95 (OSD Case 9906), "Weapons Acquisition: Precision Guided Munitions in Inventory, Production, and Development," June 23, 1995. The Services bought or were developing for future procurement 33 precision guided munition types with over 300,000 individual precision munitions to attack surface targets. The Services estimated that when planned development and procurement were complete, the United States will have invested about \$56.8 billion (then-year dollars) in the 33 precision guided munition types. The 19 munitions in inventory and production provided about 130,422 individual munitions at a cost of about \$30.4 billion. The munitions are carried on Air Force bombers and fighters and on Navy fixed-wing aircraft, helicopters, and ships. The 14 munitions in development had a combined estimated acquisition cost of about \$28.2 billion and quantities of about 174,446. In addition, some of the munitions were to be launched

¹³Report 13 has unclassified information that was extracted from a classified Secret document. This information when extracted from the overall classified Secret document, by itself, is unclassified.

from Army platforms, such as the Multiple Launch Rocket System Launcher. The development munitions were expected to reach first capability between 1996 and 2004. The GAO did not make recommendations in this report.

15. Inspector General, DoD, Report No. 95-192 "Acquisition Objectives for Antisubmarine Munitions and Requirements for Shallow Water Oceanography," May 15, 1995. The objective was to determine reasonableness of acquisition objectives for antisubmarine munitions and Navy littoral water oceanographic requirements. The report identified excessive acquisition objectives for antisubmarine warfare munitions and other expendables for unnecessary upgrades, procurement, and storage cost. The Navy planned to develop and acquire 2,000 lightweight hybrid torpedoes, valued at \$633.7 million, which were not necessary to defeat the threat. The Navy needed to acquire more meteorological and oceanographic data, models, and tactical decision aids, to include maps and charts, to conduct antisubmarine warfare operations in littoral waters, and near-shore expeditionary operations. With improved environmental data, the Navy could be more effective in conducting antisubmarine warfare operations in littoral waters and near-shore expeditionary operations. Additionally, Navy could better evaluate or develop antisubmarine warfare tactics and systems for those operations. The Navy disagreed with the report recommendations for the Lightweight Hybrid Torpedo and funding for the Oceanographer, but Navy agreed that the CBMR guidance could be improved.¹⁴

16. Inspector General, DoD, Report No. 95-157 "Army's Processes for Determining Quantitative Requirements for Anti-Armor Systems and Munitions," March 29, 1995. The report states that the Army processes for determining quantitative requirements for seven anti-armor munitions were not fully effective. The 120-millimeter munition for the M1A1/A2 main battle tank's gun system; the Tube Launched, Optically Tracked, Wire-Guided missile; the Javelin missile; the Non-Line of Sight-Combined Arms missile, and the Hellfire missiles were overstated by \$10.7 billion. The Army Tactical Missile System Block II missiles and the Brilliant Anti-Armor submunitions were overstated by \$1.1 billion. The Army overstated munitions requirements for the Sense and Destroy Armor munitions by \$502.5 million. Additionally, the Army planned to issue command-launch units for the Javelin to organizations that did not need them. The Army generally disagreed that its processes for determining requirements were ineffective or that the computed requirements were excessive. The requirement for the Sense and Destroy Munitions; however, was reduced subsequent to the audit work. In the 1998 and 1999 Program Reviews, the Director, Program Analysis and Evaluation, reported that the requirements for the Javelin missile were excessive. Based on the program reviews Javelin missile requirements were reduced. Systemic issues on the Service processes were discussed in Report No. 95-265, a summary report on the audits of the anti-armor weapon system and associated munitions.

17. Inspector General, DoD, Report No. 95-014 "The Marine Corps' Process for Determining Quantitative Requirements for Anti-Armor Munitions for Ground Forces," October 24, 1994. The audit objectives were to evaluate the reasonableness of the quantitative requirements for anti-armor weapon systems and associated munitions. The Marine Corps' quantitative requirements for anti-armor munitions were

¹⁴Reports 15 and 16 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

questionable because the Marine Corps used a level-of-effort methodology rather than a threat-oriented methodology. Therefore, the Marine Corps' quantitative requirements for anti-armor munitions were about 19 times larger than that needed to defeat the enemies' armored targets. The Navy disagreed with the recommendations stating that the threat-based analysis resulted in requirements that were so low they precluded operational flexibility and logistics supportability. The Navy further stated that their position was supported by the promotion of a CBMR process by the DoD Office of Munitions. The report issues were addressed in the DoD-wide summary report on the acquisition objectives for anti-armor requirements; however, the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics did not agree to provide the necessary specificity to DoD Instruction 3000.4. Systemic issues on the Service processes were discussed in Report No. 95-265.¹⁵

18. Inspector General, DoD, Report No. 95-006 "The Navy's Process for Determining Quantitative Requirements for Anti-Armor Munitions,"

October 11, 1994. The audit objectives were to evaluate the reasonableness of the quantitative requirements for anti-armor weapon systems and associated munitions. The audit disclosed that the Navy may spend \$832.6 million for 2,995 Joint Standoff Weapon-baseline munitions from FY 2009 through FY 2015 that are not required. Also, the Navy methodology for determining combat requirements for guided munitions for use against armored targets was questionable. Requirements for guided munitions to defeat armored targets were overstated by 10,339 munitions, costing \$354.6 million, although only \$3.9 million were planned for procurement. The Navy nonconcurred that its munitions requirements were excessive but agreed to use a threat-oriented methodology and implement the CBMR process for the FY 1996 Program Objectives Memorandum. The Navy further stated that the program acquisition quantity was an objective that changes over time and was unlikely to be matched by actual procurement. Prior to this report, the Navy did not calculate munitions requirements for shipfill. The Inspector General agreed that using the threat-oriented methodology satisfied the intent of the recommendations. Systemic issues on the Service processes were discussed in Report No. 95-265.

19. Inspector General, DoD, Report No. 94-138 "Air Force's Process for Determining Quantitative Requirements for Anti-Armor Munitions,"

June 17, 1994. The objectives were to evaluate the reasonableness of the acquisition objectives for anti-armor weapon systems and associated munitions. The audit disclosed that the reasonableness of the Air Force acquisition objectives for anti-armor munitions was questionable because of the data it used in determining its acquisition objective. The report recommended that the Air Force recalculate requirements for anti-armor munitions. The recalculation should use the threat projected in the Defense Intelligence Agency *Outyear Threat Report*, use shares of threat targets that had been coordinated with the other military departments, use a factor that had been validated by the Defense Intelligence Agency for damaged systems that the enemy could repair and return to the battle, and eliminate the use of days of

¹⁵Reports 17, 18, and 19 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

conflict in the NonNuclear Consumables Annual Analysis threat-oriented methodology. The Air Force agreed with the report recommendations and recalculated the requirements. Systemic issues on the Service processes were discussed in Report No. 95-265.¹⁶

20. Inspector General, DoD, Report No. 94-129, "Coordination of Quantitative Requirements for Anti-Armor Munitions," June 14, 1994. The initiative of the Office of Joint Chiefs of Staff to develop a DoD instruction providing guidance to the Services for determining munition requirements stemmed from the Services using inconsistent methods for such requirements determinations. Specifically, the Services used three different methods for determining quantitative munitions requirements; incorporated inconsistent threat estimates into the requirements calculations; decided on their share of targets with little, if any coordination among themselves; applied different defeat criteria to specify the numbers of enemy systems to be filled to achieve victory; and used inconsistent factors to account for enemy systems that would be damaged, repaired and returned to battle. Therefore, the accuracy of the Services' quantitative munitions requirements was questionable. The Joint Staff agreed, and incorporated the differences in the proposed 1994 DoD instruction on the CBMR.

¹⁶Reports 19 and 20 have unclassified information that was extracted from classified Secret documents. This information when extracted from the overall classified Secret documents, by itself, is unclassified.

Appendix C. Combat Munitions Data Formats

MUNITIONS EXPENDITURES BY TARGET CATEGORY OF OTR							
Column 1	2	3	4	5	6	7	8
	(** This data should be provided in a spreadsheet. Excel is preferred **)						
Service; e.g., Army							
Target Type ¹ (per OTR)	Munitions			Munitions			
e.g. MANEUVER							
		Projected Kills ³	Projected Consumption ⁴		Projected Kills ³	Projected Consumption ⁴	Total Projected Consumption
e.g. Tanks	MTW-East Portion to defeat: # ²			MTW-West Portion to defeat: # ²			
	155mm Howitzer			155mm Howitzer			
	155mm M898			155mm M898			
	ABRAMS TANK			ABRAMS TANK			
	120mm M829A2			120mm M829A2			
	Helicopters			Helicopter			
	Laser Hellfire IB			Laser Hellfire IB			
	Longbow Hellfire IB			Longbow Hellfire IB			
	Javelin			Javelin			
	Javelin IB			Javelin IB			
	etc			etc			
	Total			Total			
e.g. AFVs	MTW-East Portion to defeat: # ²			MTW-West Portion to defeat: # ²			
	155mm Howitzer			155mm Howitzer			
	155mm XM982			155mm XM982			
	Fuze Multi Option			Fuze Multi Option			
	Fuze Multi Option			Fuze Multi Option			
	Wide Area Munitions			Wide Area Munitions			
	Wide Area Munitions			Wide Area Munitions			
	etc			etc			
	Total			Total			
etc.							
	¹ Information should be reported for each target category listed in enclosure 5. All munitions need be reported for each target category.						
	² Total service apportionment should correspond to CINCs' PTD. Do not report targets for which there is no Service apportionment.						
	³ The number of targets killed by munition type in columns 2 and 5.						
	⁴ The total munitions consumed to achieve the number of projected kills by munition type.						

Figure 3-1 Combat Munitions Data Format

Appendix D. Modeling Assumptions (Factors)

Factor	Definition	Service that Uses Factor
1. Bad Battle Damage Assessment	Munitions fired on target killed but incorrectly assessed as alive	Navy, Air Force
2. Fog of War	Munitions expended due to uncertainties of war	Air Force
3. Functional/Operational Checks	Munitions expended to ensure weapons are functioning properly	Army, Marine Corps
4. Historical Losses	Munitions lost due to accidents, mines, etc.	Army
5. Indirect Fire Registration	Practice rounds	Army, Marine Corps
6. Lines of Communication	Ammo in the tactical logistics train lost to the hazards of combat	Marine Corps
7. Logistical Losses	Munitions lost along the logistics train	Army
8. Non-Discrete Targets	Munitions expended on buildings, bunkers, caves, etc.	Marine Corps
9. Onboard/Combat Losses	Munitions destroyed due to damaged friendly weapon systems	Army, Marine Corps, Air Force
10. Rear-Area Security	Munitions expended from deployment into theater to move to combat area	Army, Marine Corps
11. Screen Rate	Smoke screen grenades expended by combat vehicles	Marine Corps
12. Self-Defense	Sidearms used for self-defense of soldier	Marine Corps
13. Support Targets	Munitions expended on combat support and combat service support units	Army
14. Suspect/False Targets	Munitions expended on the wrong target	Army, Navy, Marine Corps, Air Force
15. Reconstruction	Munitions expended against repaired enemy targets	Army, Navy, Marine Corps, Air Force
16. Zeroing	Munitions expended to align firing sights from maintenance or newly issued to a unit	Army, Marine Corps

Appendix E. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense (Acquisition, Technology, and Logistics)
 Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
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Department of the Navy

Naval Inspector General
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Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
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Unified Commands

Commander in Chief, U.S. European Command
Commander in Chief, U.S. Pacific Command
Commander in Chief, U.S. Joint Forces Command
Commander in Chief, U.S. Southern Command

Unified Commands (cont'd)

Commander in Chief, U.S. Forces Korea
Commander in Chief, U.S. Central Command
Commander in Chief, U.S. Space Command
Commander in Chief, U.S. Special Operations Command
Commander in Chief, U.S. Transportation Command
Commander in Chief, U.S. Strategic Command

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, National Security Agency
Inspector General, National Security Agency
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Non-Defense Federal Organizations

Office of Management and Budget
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Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology,
Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International
Relations, Committee on Government Reform

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